CHPS HARDWARE INSTALLATION NOTE 1
Hydrological Services Division
W/OS32: RJR

SUBJECT:	**CHPS Hardware Installation**
PURPOSE:	To install one Dell R710 Controller (CHPS4), one Dell R900 Application Server (CHPS5) and one Dell R900 Database Server (CHPS6) all in Rack X (REP Rack).
SITES AFFECTED:	PTR, RSA, TAR and TUA.
AUTHORIZATION:	The authority for this note is National Weather Service, Office of Hydrologic Development.
VERIFICATION STATEMENT:	This procedure was tested and verified at TAR
ESTIMATED COMPLETION DATE:	December 11, 2009.
TIME REQUIRED:	Approximately 3.0 hour.
ACCOMPLISHED BY:	NWS and/or contractor electronics technicians.
EQUIPMENT AFFECTED:	REP Rack
SPARES AFFECTED:	None.
PARTS/MATERIALS REQUIRED:	CHPS Field Installation Kit includes:

2 - Dell R900
1 - Dell R710
3 – KVM Cables
3 – Power Cords 6 gage 9' (to be supplied by the site)
3 – Power Cords 6 gage 6' (to be supplied by the site)
6 - Ethernet Cables 10' (to be supplied by the site)

SOURCE OF PARTS/MATERIALS:	OHD
DISPOSITION OF REMOVED PARTS/MATERIALS:	N/A
TOOLS AND TEST EQUIPMENT REQUIRED:	Side Cutters
	Screw Driver
	Flashlight
DOCUMENTS AFFECTED:	None

PROCEDURE: Ensure that no unauthorized equipment has been installed in the REP Rack.

Engage two people when installing the Dell R710.

Engage three people when installing the Dell 900's.

Assemble the materials identified in Parts/Materials section of this document.

Ensure that no components are missing from the Field Installation Kit, a complete kit includes two Dell R900's, one Dell R710 and three KVM Cables.

TECHNICAL ASSISTANCE: For questions or problems pertaining to this note, contact Randy Rieman at (301) 713-0624 ext 165 or (301) 467-2543.

REPORTING INSTRUCTIONS: Notify Randy Rieman at randy.rieman@noaa.gov

Contains:
Attachment A – CHPS Install
Attachment B – Hub 6 Blocking CHPS4 Install
Attachment C – REP Rack Layout

Randy Rieman
RFC Support, HSD, OCWWS

ATTACHMENT A - CHPS Installation Procedures

A.1   Installing the Dell R710 Rack Mount Rails

> **NOTE:** The rack units on the REP rack are numbered. Each unit consists of 3 holes.

1. Locate the Dell R710 ReadyRail mount kit (located in the top of the Dell R710 box – the middle box)

Dell R710 Rail Box

2. Remove the slide rails from the box.

    a. Position the right rail in the REP rack and seat the top hooks so that the pegs of the front and rear flanges are aligned from the outside of the vertical rail with the top holes of rack unit 38 and the bottom holes of rack unit 37 on the front and rear rails of the rack. If you have trouble aligning the rail hook, see Attachment B1.

    b. Push the rear rail flange towards the front of the REP rack until the second hook locks into place in the square holes on the vertical rails.

c. Push the front rail flange towards the back of the REP rack until the second hook locks into place in the square holes on the vertical rails.

Front Rail Flange for R710

3. Repeat for the left side rail.

A.2   Installing the New Dell R710

4. Extend the two slide assemblies out of the rack until they lock.

5. Remove the R710 from its shipping container.

6. Mount the R710 to the extended rails by doing the following:

   d. Lift the system into position between the extended rails. Using a minimum of two persons, each person should place one hand on the front-bottom of the system and the other hand on the back-bottom of the system.

   e. Tilt the front of the system upward while aligning the back shoulder screws on the sides of the system with the back J-slots on the slide assembly.

f.   Engage the back shoulder screws in the rear J-slots.

g.   Lower the system until the middle and front screws are engaged in the appropriate J-slots.

h.   Push the system inward on the slide assemblies until the system-locking mechanism clicks into place, locking the slide to the system.

i.   Depress the rail release button and slide the server into the rack until it clicks into place. If the system slides 6 inches and then stops, see Attachment B2.

j.   Install the cable management system that is appropriate for your site.

Dell R710 Installed without Face Cover

7.   Install the face cover on the server and label the unit CHPS4.

A.3   Installing the New Dell R900 Rack Mount Rails

NOTE: The rack units on the REP rack are numbered. Each unit consists of 3 holes.

1.   Locate ONE of the Dell R900 rack mount boxes and remove the kit slide rails from the box.

R900 Rail in Box

2.   Remove the red tape from the right rail, ensuring the flanges are set for installation (flange with hooks and spring loaded blue release button are facing out).

a. At the front of the rack of the REP Rack, position the rail with the bottom hook of the front flange aligned with the bottom hole of rack unit #34.

b. Push the front rail flange towards the front of the REP Rack until the mounting hooks are positioned in the square holes on the vertical rails, and then push down on the flange until the locking button pops out and clicks.

R900 Rail Installed – Front of Rack

c. At the back of the rack of the REP Rack, pull back on the mounting bracket flange and position the rail with the bottom hook of the rear flange aligned with the middle hole of rack unit #34.

d. Pull back on the rear rail flange towards the back of the REP Rack until the mounting hooks are positioned in the square holes on the vertical rails, and then push down on the flange until the locking button pops out and clicks.

e. On the back of the rep rack, you may wish to insert one screw in the middle hole of rack unit #36 and another screw in the middle hole of rack unit #33 – this step is an option not a

requirement.

R900 Rail Installed – Rear of Rack

3. Repeat for the opposite side rail (remove green tape).

4. Locate the other Dell R900 rack mount kit box and remove the kit slide rails from the box.

5. Remove the red tape from the right rail, ensuring the flanges are set for installation (flange with hooks and spring loaded blue release button are facing out).

    f. At the front of the rack of the REP Rack, position the rail with the bottom hook of the front flange aligned with the bottom hole of rack unit #30.

    g. Push the front rail flange towards the front of the REP Rack until the mounting hooks are positioned in the square holes on the vertical rails, and then push down on the flange until the locking button pops out and clicks.

    h. At the back of the rack of the REP Rack, pull back on the mounting bracket flange and position the rail with the bottom hook of the rear flange aligned with the middle hole of rack unit #30.

    i. Pull back on the rear rail flange towards the back of the REP Rack until the mounting hooks are positioned in the square holes on the vertical rails, and then push down on the flange until the locking button pops out and clicks.

    j. You may wish to insert one screw in the middle hole of rack unit #32 and another screw in the middle hole of rack unit #29 – this step is an option not a requirement.

6. Repeat for the opposite side rail (remove green tape).

A.4   Installing the Two Dell R900's

NOTE: The Dell R900 System is heavy and positioning this unit this high in the rack must be done with safety first and foremost in your mind. Use any lifting equipment that is available at your site. If you have any concerns, do not install these systems. The CHPS Project Team will come up with a solution. It must be emphasized that your safety comes first … period.

Equipment Lifting Trolley

1. Extend the lower two slide assemblies (rack unit #34) out of the rack until they lock.

2. Remove the R900 from its shipping container.

3. Mount the R900 to the extended rails by doing the following:

    a. Lift the system into position between the extended rails. Using a minimum of two persons, each person should place one hand on the front-bottom of the system and the other hand on the back-bottom of the system. Note: a third person could be used to help stabilize the system when positioning between the extended rails

    b. Tilt the front of the system upward while aligning the back shoulder screws on the sides of the system with the back J-slots on the slide assembly.

    c. Engage the back shoulder screws in the rear J-slots.

    d.   Lower the system until the middle and front screws are engaged in the appropriate J-slots.

    e. Push the system inward on the slide assemblies until the system-locking mechanism clicks into place, locking the slide to the system.

    f. Depress the rail release button and slide the server into the rack.

    g. Secure the system to the rack with the thumbscrews.

    h. Install the cable management system that is appropriate for your site.

4. Label the server CHPS5.

5. Extend the upper two slide assemblies (rack unit #30) out of the rack until they lock.

6. Remove the R900 from its shipping container.

7. Mount the R900 to the extended rails by doing the following:

    a. Lift the system into position between the extended rails. Using a minimum of two persons, each person should place one hand on the front-bottom of the system and the other hand on the back-bottom of the system.

    b. Tilt the front of the system upward while aligning the back shoulder screws on the sides of the system with the back J-slots on the slide assembly.

    c. Engage the back shoulder screws in the rear J-slots.

    d.   Lower the system until the middle and front screws are engaged in the appropriate J-slots.

    e. Push the system inward on the slide assemblies until the system-locking mechanism clicks into place, locking the slide to the system.

    f. Depress the rail release button and slide the server into the rack.

    g. Secure the system to the rack with the thumbscrews.

    h. Install the cable management system that is appropriate for your site.

8. Label the server CHPS6

A.5   Attaching the Power Cords to the CHPS4

1. Facing the rear of the rack, attach a 6ft power cable to the power supply on the left side of CHPS4 (CHPS4 PS-L) and run the cable _up to_ the 2nd outlet from the left on the front set of outlets (facing the front of the rack) on PSCH1 (second from top, power strip). **Do <u>NOT</u> attach the power cable to the power strip.**

2. Facing the rear of the rack, attach a 9ft power cable to the power supply on the right side of CHPS4 (CHPS4 PS-R) and run the cable _down to_ the 2nd outlet from the left on the front set of

outlets (facing the front of the rack) on PSCH2 (bottom power strip). **Do NOT attach the power cable to the power strip.**

A.6   Attaching the Power Cords to CHPS5 and CHPS 6

1. Facing the rear of the rack, attach a 6ft power cable to the power supply on the left side of CHPS5 (CHPS5 PS-L) and run the cable _up to_ the 3rd outlet from the left on the front set of outlets (facing the front of the rack) on PSCH1 (second from top, power strip). **Do NOT attach the power cable to the power strip.**

2. Facing the rear of the rack, attach a 9ft power cable to the power supply on the right side of CHPS5 (CHPS5 PS-R) and run the cable _down to_ the 3rd outlet from the left on the front set of outlets (facing the front of the rack) on PSCH1 (bottom power strip).

3. Facing the rear of the rack, attach a 6ft power cable to the power supply on the left side of CHPS6 (CHPS6 PS-L) and run the cable _up to_ the 4th outlet from the left on the front set of outlets (facing the front of the rack) on PSCH2 (second from top, power strip). **Do NOT attach the power cable to the power strip.**

4. Facing the rear of the rack, attach a 9ft power cable to the power supply on the right side of CHPS6 (CHPS6 PS-R) and run the cable _down to_ the 4th outlet from the left on the front set of outlets (facing the front of the rack) on PSCH2 (bottom power strip). **Do NOT attach the power cable to the power strip.**

Power Strip PSCH1

←Left, viewed from front of rack

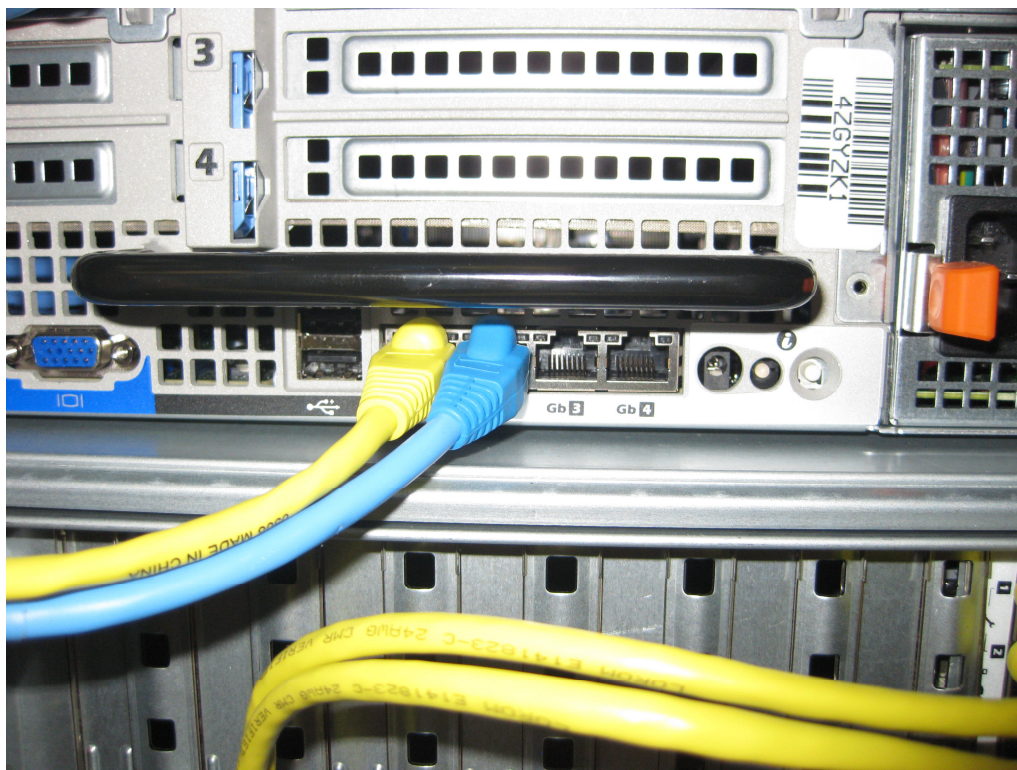|	#1	#2	#3	#4	#5	#6
Front Facing		CHPS4 PS-L	CHPS5 PS-L	CHPS6 PS-L		
Rear Facing		CHPS1 PS-L	CHPS2 PS-L	CHPS3 PS-L		

←Left, viewed from rear of rack

Power Strip PSCH2

←Left, viewed from front of rack

Facing	#1	#2	#3	#4	#5	#6
Front Facing		CHPS4 PS-R	CHPS5 PS-R	CHPS6 PS-R		
Rear Facing		CHPS1 PS-R	CHPS2 PS-R	CHPS3 PS-R		

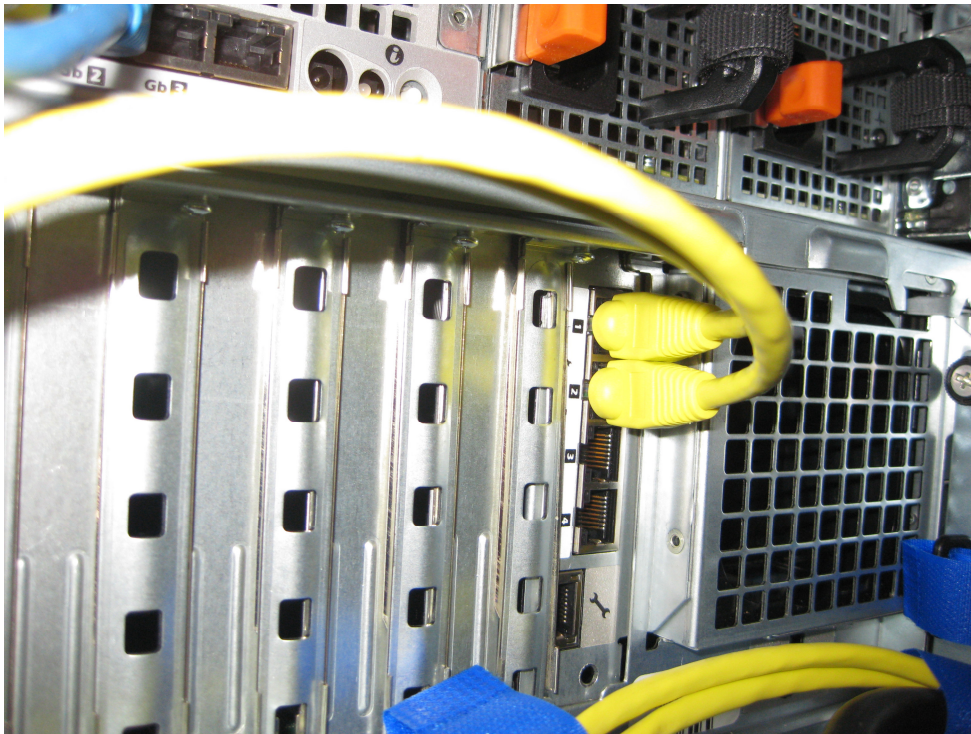←Left, viewed from rear of rack

Table A-1 Power Cables

A.7   Attaching the CHPS Networking Cables

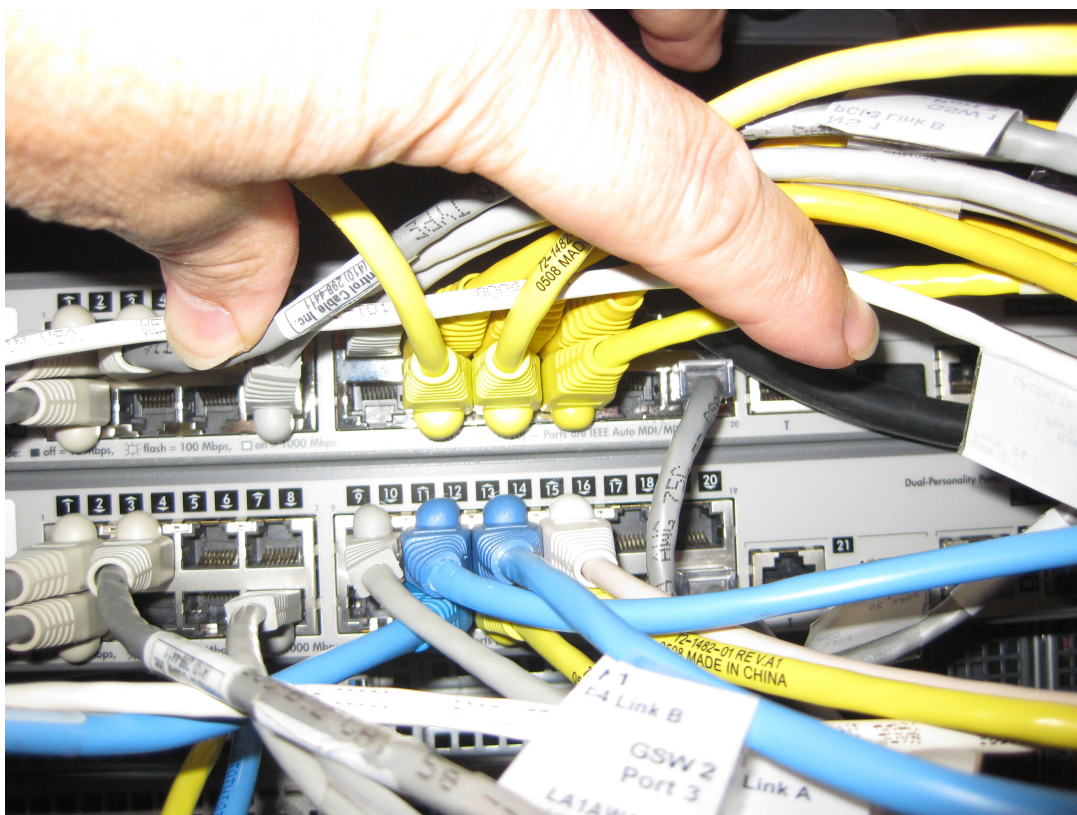Attach the Ethernet cables as outlined in **Table A-2 Cable Reference**.
Note: The Monitor Control cables will be installed at a later date.

Source Device	Source Identifier	Dest. Device	Dest. Identifier	Wire Number	Part #
CHPS4	Port Gb 1	REP/GSW-1	port 12		
CHPS5	Port Gb 1	REP/GSW-1	port 14		
CHPS6	Port Gb 1	REP/ GSW-1	port 16		
CHPS4	Port Gb 2	REP/ GSW-2	port 12		
CHPS5	Port Gb 2	REP/ GSW-2	port 14		
CHPS6	Port Gb 2	REP/ GSW-2	port 16		
CHPS4	USB & monitor	KVM	port 6		
CHPS5	USB & monitor	KVM	port 7		
CHPS6	USB & monitor	KVM	port 8		

Table A-2 Cable Reference

Dell R710 Ethernet Cable Connections
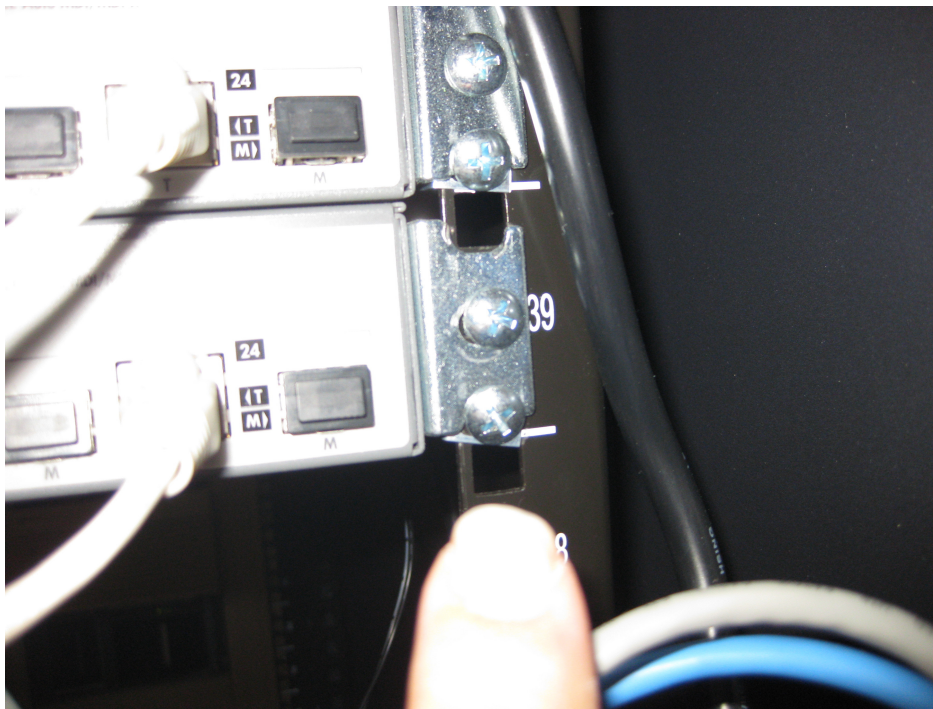
R900 Ethernet Cable Connections

REP/GSW-1 Ethernet Cable Connections

ATTACHMENT B - Hub6/GSW2 Blocking CHPS4 Install

Due to the way that the HP Procurve 2824 Switches are mounted in the Rep Rack, the switches can present a problem when installing CHPS4.

B.1   Hub6/GSW2 Hardware Blocking CHPS4 Rail Installation

If the CHPS4 rail does not lock into place, this is an indication that the Hub6/GSW2 (HP Procurve 2824), bracket, capture nut and/or screw is sagging down into the top hole of rack unit #38.

Hub6/GSW2 Bracket, Lock Nut and Screw

Note: The lock nut & screw are shown sagging down into the top hole of #38

1. Remove the CHPS4 ReadyRail from the rack.

2. Loosen the two screws supporting Hub6 on the offending side. With another person pushing upward on Hub6/GSW2, place a screwdriver against the bottom of the capture nut and tap the bottom of the screwdriver upward with the object of your choice (i.e., a small hammer).

3. Tighten the two screws

4. Attempt to install the rail again

5. Repeat if necessary.

B.2   CHPS4 Does Not Slide All the Way In to Position

1. Slide CHPS4 out approximately one inch.

2. Go around to the back of the rack.

3. With one hand grasp the back handle on the back of CHPS4 and with the other hand place one hand near the rear edge of the sagging Hub6/GSW2.

4. While pushing up on the bottom of Hub6/GSW2, pull CHPS4 toward the back of the rack (towards you) until Hub6/GSW2 is positioned on the top of CHPS4.
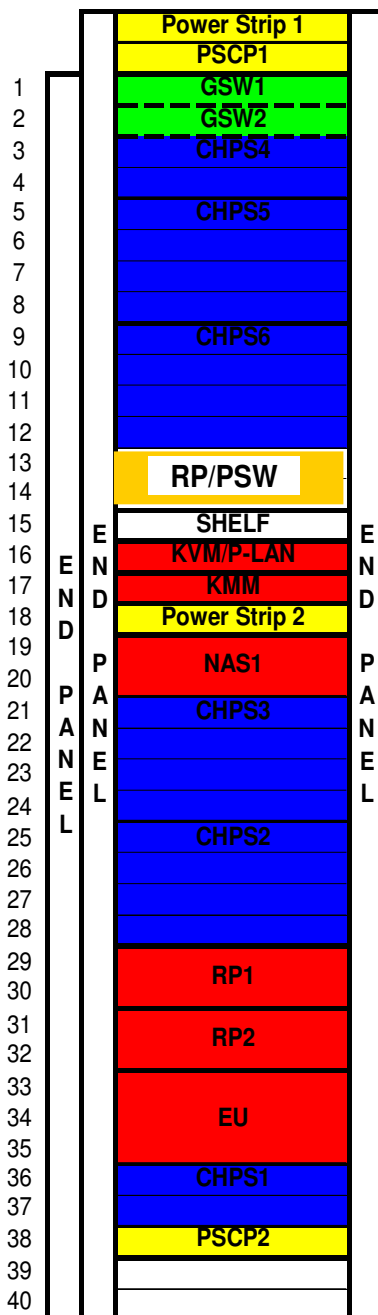

Hub6/GSW2 positioned on top of CHPS4

5. Remove your hand from the bottom of Hub6/GSW2 and continue to pull CHPS4 toward you until it clicks into place

ATTACHMENT C - REP Rack Layout

C.1   CHPS Hardware after REP Replacement

Note: The REP Replacement affects Power Strips 1& 2 and reduces the number of REP switches to one: RP/PSW.

Rack Position	Component
	Power Strip 1
	PSCP1
1	**GSW1**
2	**GSW2**
3	**CHPS4**
4	
5	**CHPS5**
6	
7	
8	
9	**CHPS6**
10	
11	
12	
13	**RP/PSW**
14	
15	**SHELF**
16	**KVM/P-LAN**
17	**KMM**
18	**Power Strip 2**
19	**NAS1**
20	
21	**CHPS3**
22	
23	
24	
25	**CHPS2**
26	
27	
28	
29	**RP1**
30	
31	**RP2**
32	
33	
34	**EU**
35	
36	**CHPS1**
37	
38	**PSCP2**
39	
40	

**RACK-8 REP
RFC**

Power Strip 1 (top of rack)

	#1	#2	#3	#4	#5	#6
Front Facing	PSW			REP1-L	REP2-L	GSW1
Rear Facing				NS1-L Left	EU-L Left	

←Left

PSCP 1 (top of rack) Power Strip CHPS

	#1	#2	#3	#4	#5	#6
Front Facing		CHPS4-L	CHPS5-L	CHPS6-L		
Rear Facing		CHPS1-L	CHPS2-L	CHPS3-L		

←Left

PSCP = Power Supply CHPS

Power Strip 2 (middle of rack)

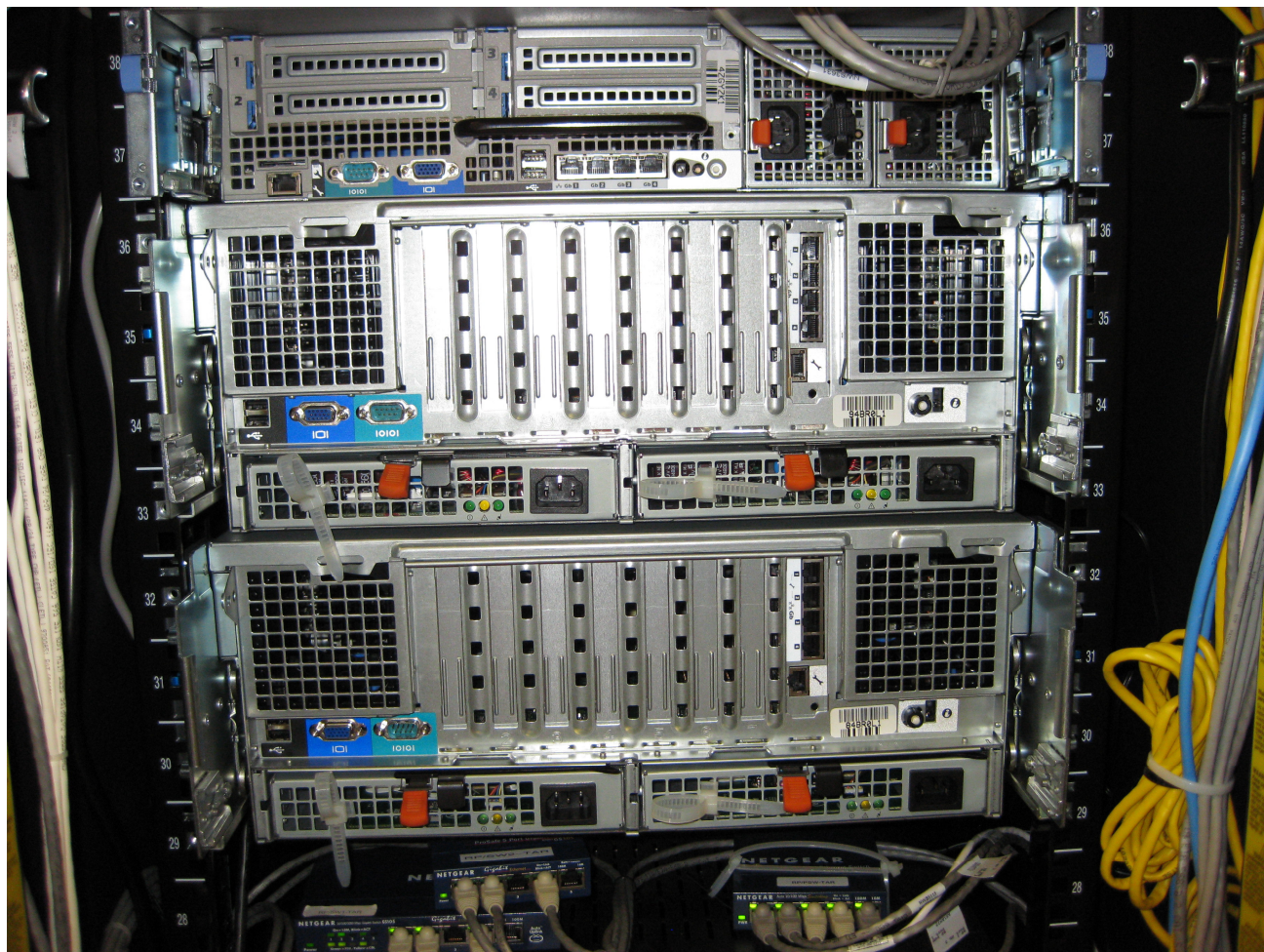|	#1	#2	#3	#4	#5	#6
Front Facing	KMM			REP1-R	REP2-R	GSW2
Rear Facing				NS1-R	EU-R Right	

←Left

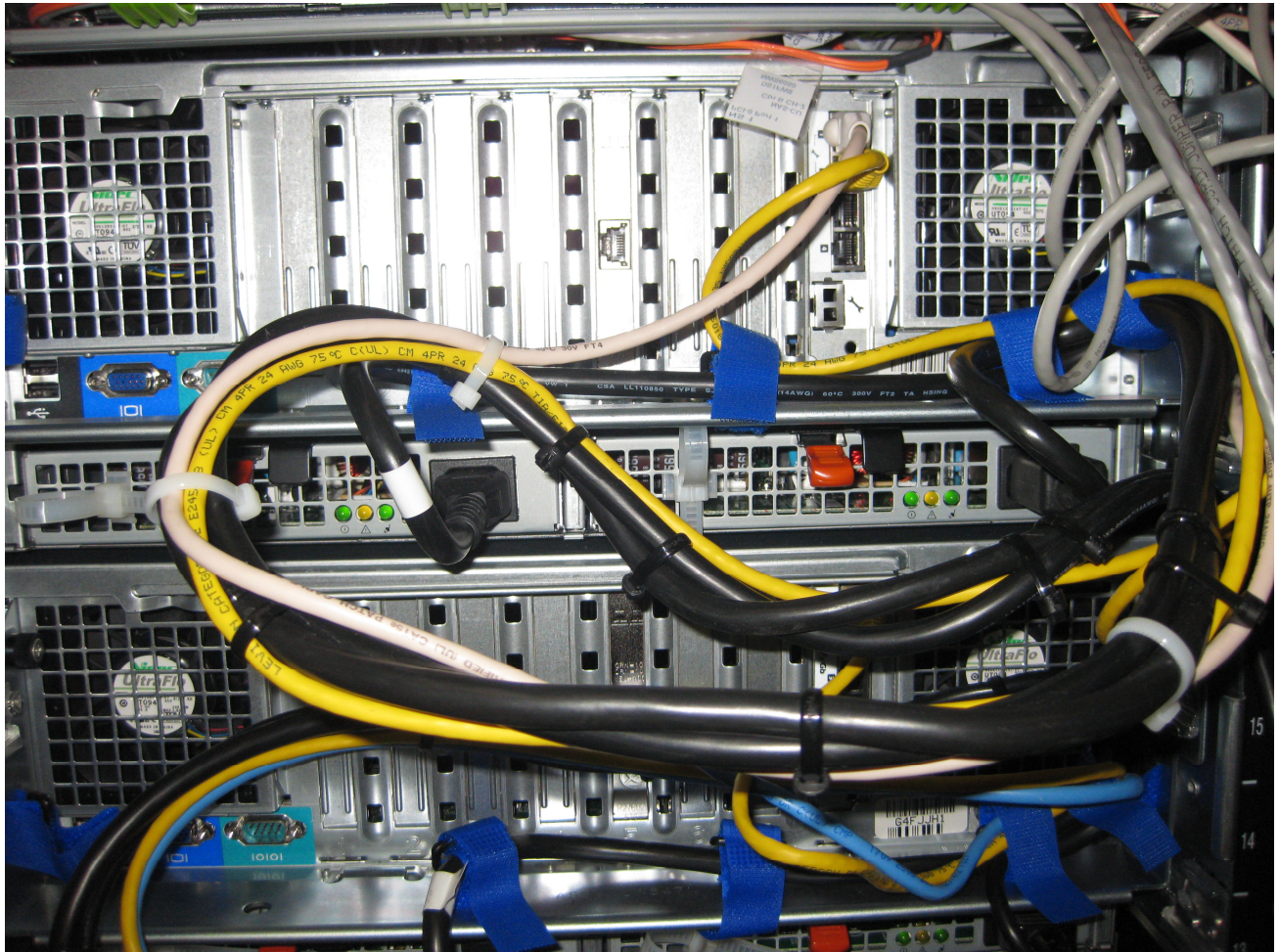### PSCP 2 (bottom of rack) Power Strip CHPS

	#1	#2	#3	#4	#5	#6
Front Facing		CHPS4-R	CHPS5-R	CHPS6-R		
Rear Facing		CHPS1-R	CHPS2-R	CHPS3-R		

←Left

PSCP = Power Supply CHPS

Rear of REP Rack

Rear of REP Rack

Front of REP Rack After Install

Front of REP Rack After Install with Face Covers